

CLIMATOLOGICAL DATA FOR MARCH, 1912.

DISTRICT No. 4, THE LAKE REGION.

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GENERAL SUMMARY.

The severe wintry conditions which prevailed practically unbroken over this district during January and February continued through March, the average temperature for the month being from 4° to 11° below the normal. This completed a period of cold weather which at many points equaled or exceeded in severity and duration that of any other similar three-month period since the establishment of the Weather Bureau. At nearly all stations the month was one of the coldest on record, and over portions of New York and Vermont all minimum temperature records for March were broken.

With the exception of two storms of unusual severity which passed south of the district on the 14th-15th and 20th-21st, respectively, and which caused extensive precipitation over the eastern and southern portions only, the month in all other sections was free from damaging and destructive storms. The storm of the 14th-15th brought heavy snow over the southern portion of the western Lake region, and rain, heavy in localities, over the eastern portion of the district. The storm of the 20th-21st, following closely as it did an area of high pressure and passing off into the middle Atlantic Ocean, caused general precipitation in the form of snow, interfering greatly with all kinds of traffic, especially in the southwestern Lake region, where it was accompanied by high northerly winds.

The percentage of possible sunshine was considerably above the average in all sections, and the total wind movement for the month was somewhat below the normal, no exceptionally high maximum wind velocities being reported.

The following table shows mean values of the more important weather conditions of the month:

Portions of States lying within district No. 4.	Mean.				Greatest precipitation in 24 hours.	Mean snowfall, inches.	Number of days.			Prevailing wind direction.
	Temperature.	Departure from normal.	Precipitation.	Departure from normal.			Precipitation.	Clear.	Partly cloudy.	
Minnesota.....	18.3	- 4.8	0.26	- 1.15	0.28	3.8	3	17	9	w.
Wisconsin.....	22.4	- 4.1	0.84	- 1.15	0.80	6.7	5	16	8	sw.
Illinois.....	28.8	- 5.6	2.20	- 0.35	1.08	13.5	7	7	11	ne.
Indiana.....	27.4	- 10.7	2.44	- 0.36	0.85	16.8	9	13	5	ne.
Upper Michigan.....	17.4	- 5.0	0.43	- 1.52	0.70	3.6	4	18	8	w.
Lower Michigan.....	22.7	- 8.1	1.28	- 0.91	1.37	11.7	5	15	8	ne.
Ohio.....	29.3	- 7.8	3.05	+ 0.10	1.40	9.6	9	10	7	14.
Pennsylvania.....	28.5	- 4.6	3.12	+ 0.46	0.77	8.4	15	5	16	10. ne.
New York.....	24.6	- 5.9	2.52	- 0.12	1.74	12.5	10	11	11	9. nw.
Vermont.....	22.4	- 4.9	3.02	+ 0.41	1.04	13.7	9	13	9	9. s.

TEMPERATURE.

The temperature averaged much below the normal over the whole district, and at many points in the lower Michigan Peninsula, northern Indiana, Ohio, New York, and Vermont the month was the coldest on record. The persistency of the cold weather was remarkable, average temperatures below normal being recorded nearly every day, especially in the above-mentioned localities. The coldest periods of the month were from the 1st to the 6th and from the 20th to the 26th, inclusive. During the first period temperatures of zero and below occurred over all portions of the district except along the extreme southern edge. This cold weather was exceptionally severe over eastern New York and Vermont, where the daily departures from the 3d to the 6th averaged from 18° to 27° . At North Lake, Herkimer County, N. Y., a minimum of -35° was reported on the 3d, and at Northfield, Vt., a minimum of -22° occurred on the 6th, these readings being the lowest March temperatures on record for the respective stations. The second cold period was unusually severe for so late in the month and again the departures were greatest over eastern sections. At Nehasane, N. Y., minimums of -15° and -27° were reported on the 22d and 23d, respectively, and temperatures near zero occurred as late as the 26th even in the southern portion of that State.

The only pronounced warm period of the month occurred from the 17th to the 19th, inclusive, when the daily maximum temperatures were considerably above freezing over all sections, although the highest temperatures of the month were reported at most stations on the 31st. These temperatures generally reached at least 50° , and over Ohio and Indiana temperatures of 70° were recorded.

PRECIPITATION.

The precipitation for the month was below normal, except in western Vermont, the western counties of central New York, and those portions of Ohio and Pennsylvania lying to the south of Lake Erie. The deficiency was most marked in the upper Lake region, where nearly all stations reported monthly amounts of less than 1 inch and many places had less than 0.50 inch, practically all of this being in the form of snow. The number of days with precipitation of 0.01 inch or more averaged about 5 in the upper Lake region, gradually increasing to over twice that amount in the lower Lake region and eastern sections. At Sault Ste. Marie, Mich., the total precipitation, 0.19 inch, was the lightest ever recorded for any

month at that station. In Ohio and New York the precipitation was about equally divided between rain and snow, but during the storms of the 14th-15th and 29th-31st it occurred mostly in the form of rain, although in the northwestern counties of Ohio from 5 to 9 inches of snow fell on the 14th-15th. In Indiana, owing to the fact that the storms of the month giving the heaviest precipitation passed up the Ohio valley, the eastern portion of the State received monthly amounts nearly twice as great as did the central and western sections. As a whole, the precipitation was well distributed over the district during the month, occurring at intervals of from two to four days. This is especially true of those portions reporting amounts above the normal, although during the first six days of cold weather the precipitation was generally light and confined to snow flurries.

SNOW.

While the total depth of snowfall for the month averaged in most places slightly below the normal, especially in the upper Lake region where the fall was unusually light, yet the ground was well covered with snow over practically the whole of the district until the closing days of the month, when appreciable amounts were reported only from the interior of the Michigan peninsulas and the northern portions of New York and Vermont. Over portions of Indiana and Ohio the total snowfall for the month was much above the normal, Hammond, Ind., reporting a total depth of 26 inches, and Montpelier, Ohio, a depth of 21 inches. During the severe storms of the 14th-15th and 20th-21st from 8 to 15 inches of snow fell generally over southern and eastern portions of the district, except that over southeastern sections the precipitation was in the form of rain during the first storm, as previously noted. A storm of lesser extent and intensity, occurring on the 11th-12th, caused heavy snow over the extreme southwestern Lake region. These storms, which were accompanied by high northerly winds, occasioned great delays to traffic, especially in the larger cities, and it was estimated that the storm of the 20th-21st alone resulted in the expenditure of nearly \$100,000 by the railroad and traction companies operating in and around Chicago in endeavoring to keep their tracks free from snow.

ICE AND RIVERS.

Owing to the unusual and uniform cold of the month, ice conditions in the Great Lakes remained practically unchanged until the end of the month, and at all times extensive fields of ice were reported. Over the western Lake Superior region the ice extended solid as far as eye could reach during the whole month, and maintained near shore an average thickness of 29 inches. During the first half of the month the ice increased slightly in

all lakes, and a maximum thickness of 42 inches was reported by the United States engineers at the southern end of Green Bay, Wis. At the extreme southern end of Lake Michigan most unusual conditions were noted in that great piles of ice accumulated at various places in the lake, a few miles offshore, probably over sand bars. This was due principally to the severe northeast storms which swept that portion of the lake during the month. Considerable trouble was experienced by freighters in and out of Chicago as a result of the extensive fields which continued to hinder navigation until the first days of April. Under date of April 2, 1912, the marine agent at Detroit reported that the ice fields were decreasing to some extent and that more open water was visible in all the Lakes, this being the first favorable report of the season, looking forward to the opening of navigation.

The warm weather of the 17th-19th caused a rapid melting of the ice in the rivers and streams of lower Michigan, northern Indiana, and Ohio, but the resulting rise of water was temporarily checked by the return of cold weather on the 20th, and, with the exception of some damage to bridges along rivers in Ohio, no serious floods occurred. However, the water remained high, especially in the streams of Lower Michigan, and by the end of the month with more moderate temperature conditions, resulting in a further melting of the snow covering, a decided rise had occurred at all points, and flood stages were again reached or passed.

MARCH, 1912, LAKE LEVELS.

The following data are from the report of the United States Lake Survey Office, Detroit, Mich.:

Level above tidewater at New York.

	Feet.
Lake Superior.....	601.39
Lakes Michigan and Huron.....	579.27
Lake Erie.....	571.19
Lake Ontario.....	245.10

Lake Superior is 0.12 foot lower than last month, 0.73 foot higher than a year ago, 0.36 foot below the average stage for March of the last 10 years, 0.89 foot below the high stage of March, 1901, and 0.73 foot above the low stage of March, 1911. It will probably remain about stationary during April.

Lakes Michigan and Huron are 0.03 foot lower than last month, 0.02 foot lower than a year ago, 0.91 foot below the average stage for March of the last 10 years, 3.68 feet below the high stage of March, 1886, and 0.16 foot above the low stage of March, 1896. They will probably rise 0.3 foot during April.

Lake Erie is 0.07 foot higher than last month, 0.11 foot higher than a year ago, 0.56 foot lower than the average stage for March of the last 10 years, 2.66 feet below the high stage of March, 1887, and 0.36 foot above the low stage of March, 1896. It will probably rise 0.6 foot during April.

Lake Ontario is 0.23 foot higher than last month, 0.14 foot higher than a year ago, 0.68 foot lower than the average stage for March of the last 10 years, 2.71 feet below the high stage of March, 1886, and 0.80 foot above the low stage of March, 1897. It will probably rise 0.6 foot during April.

